Eng
TA
1
E5712
v 8

Transf. to Engineering
W1159

INDEX TO VOLUME VIII.

Abatement of Smoke in Large Cities, Benjamin, 181
Accumulator, The, (Izart), 272, 368
Adjustable Boring Knee, E. F., 349
Advance, A Recent, in Bakery Engineering, F. J. Rowan, 332
All-British Submarine Telegraph Cable, 176
Allen, Edgar & Co., Ltd., Amalgamation of, Askham Bros., & Wilson, Ltd., with, 445
Alloys, Q., J. F. B., 75, 263
of Iron, Magnetic and Electric Properties of, (Barrett and others), 565
as Revealed by Modern Research, P. Longmuir, 221
Alterations in Dynamos, Q., W. W., 75, 263, R., J. H. H., 547
Alternating Currents, Simple Series Motors with, (Girault), 367
Alternative Route for the Nicaragua Canal, (Le Baron), 77
Aluminothermic Process, The Goldschmidt, (Firket), 179
Amalgamation of Askham Bros. & Wilson, Ltd, with Edgar Allen & Co., Ltd., Sheffield, 445
America, Central, *see* Nicaragua *and* Panama Canals, *and* Rio Grande Railway Bridge
America(n), U.S., *see* Baltimore, Bethlehem Steel Works, Columbus (Ohio), East Boston Tunnel, Mosely Commission, Mississippi Bridge, New York, Nicaragua Canal
and British Railroad Practice, (Yorke's report reviewed), 415
—— —— Railways, (Worsdell), 178
Comparative Cost of Street Lighting, Gas and Electric in, (Lacombe), 461
Locomotive Practice, (Cowan), 557
Oiled-Shell Roads in, 78
Pipe-Arch Bridge in, 169
Protracted Job of Underpinning in, 169
Wireless Telephony Experiments in, (Collins), 176
Wood Pulleys, (Fraola), 355
Analysis, (*see* Entropy Analysis), Micrographic, of Steel, (Osmond), 464
Angle(s), Cutting Brass Strips to an, 333, Q., A.B., 353, R., S.W.A., 548
Cutting, of Tools, (Donaldson), 373
Anodes, Soluble, Formation of Insoluble Deposits in Electrolysis with, (Isenburg), 559
Antwerp Steel Works, Electrical Equipment of, 38
Arc, *see* Mercury Arc
Arch, *see* Two-Hinged Arch
Armour-Piercing Projectiles, D. Carnegie, 360
Armoured Concrete, (Considère), 266
—— —— Construction, Hennebique System, (Mensch), 78
Ashford, J., The Premium System of Remunerating Labour, 499
Askham Bros. & Wilson, Ltd., Amalgamation of, with Edgar Allen & Co., Ltd., 445
Asynchronous Generators, Excitation of, by Static Condensance, (McAllister), 272
Atmosphere, the, Purification of by Ozone, Harris' apparatus, (Williams), 85
Atmospheric Change in its Effect on Load, Q., W. W., 76, 264
Automatic Regulating of Voltage in Central Stations, Tyrell's, (Kilburn Scott), 467
Regulators for Septic Tanks, 171
Screw-Machine, Camming an, (Teboult), 179
Stokers and Smoke Abatement, (Benjamin), 181
Automobiles, Electric, (Joel), 369

"Backing-off" Formed Milling Cutters, F. B., 446
Bakery Engineering, A Recent Advance in, F. J. Rowan, 332
Balance, Dynamic, of the Connecting-Rod, (Matthey), 466
Balancing, High-Speed Engines, J. H. Dales, 410
of Marine Engines, (Roundthwaite), 553
Ball-bearings, Steel, Researches on, Stribeck and others, 278
Baltimore, U.S.A., Single-Phase Electric Railway at, (Lamme), 273
Bar(s), *see* Boring Bar, *and* Test Bars
Bare Steam Pipes, Loss of Heat from, (Paulding), 82
Basic Steel, Manufacture of Open-Hearth, (MacMillan), 268
Battery(ies), (*see* Engineering Abstracts, Storage Battery, *etc.*), Dry, Recuperating, (Sherlock), 468
Beachy Head Lighthouse, The New, T. Williams, 281
Beams and Columns, Wooden, for Street Railway Bridge Construction, Table for determining sizes of, (Andrews), 458
Deflections of, with Variable Moments of Inertia, (Hudson), 554
Bearings, (*see also* Ball-bearings), Changes in Temperature causing Trouble with, H. C., 351
Methods of Testing Oils and Metals for, (Breuil), 358
Bedell System of Composite Transmission, (McAllister), 462
Behr's Mono-rail, (Manchester to Liverpool), 84
Belgium, *see* Antwerp
Bells and Telephones, Testing Arrangements for, W. W., 347
Bengal-Nagpur Railway, Portable Air-Compressing Plant for, (Richards & Co.'s), 438
Rupnarayan Bridge on, 171
Bent Rod, Vacuum Spoilt by, Dunelmian, 350
Berthon, Major C., Wire-bound Ordnance, 489
Bethlehem Steel Works, U.S.A., Experiments on Tool Steel at, 464
Bhadar River, India, Irrigation Weir on, (Benson), 469
Biological Purification of Water, (de Montricher), 469
Blast Furnace, the, Power from, (Uehling), 463
Practice, (Allen), 568
Boiler(s), *see* Shell, Tubular, *and* Water-Tube Boilers
Feed, Greasy Condensation Water as, (Paterson), 562
Flues, How Tested, Q., E. H. D., 353
Shell Circumference, R., A. W. R., 76, R. M., 354
Books Reviewed, *see* Engineers' Bookshelf
Boring Bar for Propellers, E. H. D., 351
Knee, Adjustable, E. F., 349
Tool, A, W. P., 451
and Turning Cast-Iron Pipes, Electrically-Driven Lathe for, (Addy's), 253
Bournemouth Tramways, Combined Conduit and Overhead System of, (Connett), 275
Boyer, J., The Paris Metropolitan Railway, 204, 319
Braiding Machine, High-Speed Rotary, 442
Brake Friction, Cast-Iron Wheels to resist, (Sargent), 566
Tests, (Keiley), 459
Braking of Railroad Cars, (Parke), 555
Brass, Cutting Strips of, to an Angle, Q., A. B., 353, R., S. W. A., 548
Brick, Properties of, under different Physical Conditions, (Turrill), 554
Bridge(s), *see* Byker Bridge, Calculations for, London Bridge, Masonry Bridge, Mississipi Bridge, Pipe-Arch Bridge, Rio Grande Railway Bridge, Rupnarayan Bridge, Street Railway Bridge Construction
Construction, Types and Details of, (Skinner), 554
proposed, across the Strand, 170
Briquetting in the Iron Industry, (Mould), 361
British, (*see* All-British Cable),
and American Railroad Practice, (Yorke's Report, reviewed), 415
—— —— Railways, (Worsdell), 178
Standard Sections, List I., 456
Building a Commutator, Q., E. C., 75, 263., R., J. H. H., 547
Building(s), *see* Horticultural *and* Steel Buildings
Butler, E., Some Remarks on the Compound Explosion Engine, 391
Byker Bridge, Widening of, Newcastle-on-Tyne, 313

Cable(s)
High-Tension, Lightning Protectors for, (Bainville), 463
The Pacific, 176
Calculating Crank Effort, A Method of, 83
the Weight of Castings, (Schwerin), 85
Calculation(s), Ritter's, for Masonry for Bridges, (Lossier), 359
Theory and, of the Two-Hinged Arch, (McKim), 554
Camming Automatic Screw-Machine, (Teboult), 179
Canal(s), *see* Nicaragua and Panama Canals
Experimental Laboratory, (Bischoffsheim), 358
Haulage, Electric, New Ganz System of, G. Szasz, 185
Capacity of Lead Storage Battery, (Marsh), 368
Car(s) Lighting System, An Electric, (Bliss), 461
Railroad, Braking of, (Parke), 555
Wheels of Chilled Iron, 275
Cardboard, *see* Silicated Cardboard
Case-hardening Steel, (Markham), 465
Cast-Iron Pipes, Electrically-driven Lathe for boring and turning, (Addy's), 253
Tuyère, Construction of Pattern for, H. D., 347
Wheels for Modern Rolling-Stock, (Sargent), 566
—— *versus* Wrought-Iron Steam Mains, (Robbins), 173
Casting a High-Explosive Shell, (Powell), 360
Castings, Calculating the Weight of, (Schwerin), 85

Eng
TA
1
E5712
v 8

Transf. to Engineering
W1159

INDEX TO VOLUME VIII.

Abatement of Smoke in Large Cities, Benjamin, 181
Accumulator, The, (Izart), 272, 368
Adjustable Boring Knee, E. F., 349
Advance, A Recent, in Bakery Engineering, F. J. Rowan, 332
All-British Submarine Telegraph Cable, 176
Allen, Edgar & Co., Ltd., Amalgamation of, Askham Bros., & Wilson, Ltd., with, 445
Alloys, Q., J. F. B., 75, 263
of Iron, Magnetic and Electric Properties of, (Barrett and others), 565
as Revealed by Modern Research, P. Longmuir, 221
Alterations in Dynamos, Q., W. W., 75, 263, R., J. H. H., 547
Alternating Currents, Simple Series Motors with, (Girault), 367
Alternative Route for the Nicaragua Canal, (Le Baron), 77
Aluminothermic Process, The Goldschmidt, (Firket), 179
Amalgamation of Askham Bros. & Wilson, Ltd, with Edgar Allen & Co., Ltd., Sheffield, 445
America, Central, *see* Nicaragua *and* Panama Canals, *and* Rio Grande Railway Bridge
America(n), U.S., *see* Baltimore, Bethlehem Steel Works, Columbus (Ohio), East Boston Tunnel, Mosely Commission, Mississippi Bridge, New York, Nicaragua Canal
and British Railroad Practice, (Yorke's report reviewed), 415
—— —— Railways, (Worsdell), 178
Comparative Cost of Street Lighting, Gas and Electric in, (Lacombe), 461
Locomotive Practice, (Cowan), 557
Oiled-Shell Roads in, 78
Pipe-Arch Bridge in, 169
Protracted Job of Underpinning in, 169
Wireless Telephony Experiments in, (Collins), 176
Wood Pulleys, (Fraola), 355
Analysis, (*see* Entropy Analysis), Micrographic, of Steel, (Osmond), 464
Angle(s), Cutting Brass Strips to an, 333, Q., A.B., 353, R., S.W.A., 548
Cutting, of Tools, (Donaldson), 373
Anodes, Soluble, Formation of Insoluble Deposits in Electrolysis with, (Isenburg), 559
Antwerp Steel Works, Electrical Equipment of, 38
Arc, *see* Mercury Arc
Arch, *see* Two-Hinged Arch
Armour-Piercing Projectiles, D. Carnegie, 360
Armoured Concrete, (Considère), 266
—— —— Construction, Hennebique System, (Mensch), 78
Ashford, J., The Premium System of Remunerating Labour, 499
Askham Bros. & Wilson, Ltd., Amalgamation of, with Edgar Allen & Co., Ltd., 445
Asynchronous Generators, Excitation of, by Static Condensance, (McAllister), 272
Atmosphere, the, Purification of by Ozone, Harris' apparatus, (Williams), 85
Atmospheric Change in its Effect on Load, Q., W. W., 76, 264
Automatic Regulating of Voltage in Central Stations, Tyrell's, (Kilburn Scott), 467
Regulators for Septic Tanks, 171
Screw-Machine, Camming an, (Teboult), 179
Stokers and Smoke Abatement, (Benjamin), 181
Automobiles, Electric, (Joel), 369

"Backing-off" Formed Milling Cutters, F. B., 446
Bakery Engineering, A Recent Advance in, F. J. Rowan, 332
Balance, Dynamic, of the Connecting-Rod, (Matthey), 466
Balancing, High-Speed Engines, J. H. Dales, 410
of Marine Engines, (Roundthwaite), 553
Ball-bearings, Steel, Researches on, Stribeck and others, 278
Baltimore, U.S.A., Single-Phase Electric Railway at, (Lamme), 273
Bar(s), *see* Boring Bar, *and* Test Bars
Bare Steam Pipes, Loss of Heat from, (Paulding), 82
Basic Steel, Manufacture of Open-Hearth, (MacMillan), 268
Battery(ies), (*see* Engineering Abstracts, Storage Battery, *etc.*), Dry, Recuperating, (Sherlock), 468
Beachy Head Lighthouse, The New, T. Williams, 281
Beams and Columns, Wooden, for Street Railway Bridge Construction, Table for determining sizes of, (Andrews), 458
Deflections of, with Variable Moments of Inertia, (Hudson), 554
Bearings, (*see also* Ball-bearings), Changes in Temperature causing Trouble with, H. C., 351
Methods of Testing Oils and Metals for, (Breuil), 358
Bedell System of Composite Transmission, (McAllister), 462
Behr's Mono-rail, (Manchester to Liverpool), 84
Belgium, *see* Antwerp
Bells and Telephones, Testing Arrangements for, W. W., 347
Bengal-Nagpur Railway, Portable Air-Compressing Plant for, (Richards & Co.'s), 438
Rupnarayan Bridge on, 171
Bent Rod, Vacuum Spoilt by, Dunelmian, 350
Berthon, Major C., Wire-bound Ordnance, 489
Bethlehem Steel Works, U.S.A., Experiments on Tool Steel at, 464
Bhadar River, India, Irrigation Weir on, (Benson), 469
Biological Purification of Water, (de Montricher), 469
Blast Furnace, the, Power from, (Uehling), 463
Practice, (Allen), 568
Boiler(s), *see* Shell, Tubular, *and* Water-Tube Boilers
Feed, Greasy Condensation Water as, (Paterson), 562
Flues, How Tested, Q., E. H. D., 353
Shell Circumference, R., A. W. R., 76, R. M., 354
Books Reviewed, *see* Engineers' Bookshelf
Boring Bar for Propellers, E. H. D., 351
Knee, Adjustable, E. F., 349
Tool, A, W. P., 451
and Turning Cast-Iron Pipes, Electrically-Driven Lathe for, (Addy's), 253
Bournemouth Tramways, Combined Conduit and Overhead System of, (Connett), 275
Boyer, J., The Paris Metropolitan Railway, 204, 319
Braiding Machine, High-Speed Rotary, 442
Brake Friction, Cast-Iron Wheels to resist, (Sargent), 566
Tests, (Keiley), 459
Braking of Railroad Cars, (Parke), 555
Brass, Cutting Strips of, to an Angle, Q., A. B., 353, R., S. W. A., 548
Brick, Properties of, under different Physical Conditions, (Turrill), 554
Bridge(s), *see* Byker Bridge, Calculations for, London Bridge, Masonry Bridge, Mississipi Bridge, Pipe-Arch Bridge, Rio Grande Railway Bridge, Rupnarayan Bridge, Street Railway Bridge Construction
Construction, Types and Details of, (Skinner), 554
proposed, across the Strand, 170
Briquetting in the Iron Industry, (Mould), 361
British, (*see* All-British Cable),
and American Railroad Practice, (Yorke's Report, reviewed), 415
—— —— Railways, (Worsdell), 178
Standard Sections, List I., 456
Building a Commutator, Q., E. C., 75, 263., R., J. H. H., 547
Building(s), *see* Horticultural *and* Steel Buildings
Butler, E., Some Remarks on the Compound Explosion Engine, 391
Byker Bridge, Widening of, Newcastle-on-Tyne, 313

Cable(s)
High-Tension, Lightning Protectors for, (Bainville), 463
The Pacific, 176
Calculating Crank Effort, A Method of, 83
the Weight of Castings, (Schwerin), 85
Calculation(s), Ritter's, for Masonry for Bridges, (Lossier), 359
Theory and, of the Two-Hinged Arch, (McKim), 554
Camming Automatic Screw-Machine, (Teboult), 179
Canal(s), *see* Nicaragua and Panama Canals
Experimental Laboratory, (Bischoffsheim), 358
Haulage, Electric, New Ganz System of, G. Szasz, 185
Capacity of Lead Storage Battery, (Marsh), 368
Car(s) Lighting System, An Electric, (Bliss), 461
Railroad, Braking of, (Parke), 555
Wheels of Chilled Iron, 275
Cardboard, *see* Silicated Cardboard
Case-hardening Steel, (Markham), 465
Cast-Iron Pipes, Electrically-driven Lathe for boring and turning, (Addy's), 253
Tuyère, Construction of Pattern for, H. D., 347
Wheels for Modern Rolling-Stock, (Sargent), 566
—— *versus* Wrought-Iron Steam Mains, (Robbins), 173
Casting a High-Explosive Shell, (Powell), 360
Castings, Calculating the Weight of, (Schwerin), 85

Castings, Rough, Eccentric Plugs for, T. L. B., 349
White Iron, Strength of as influenced by Heat Treatment, (Outerbridge), 565
Cement-making, Slag in, (Eckel), 79
Masonry, Notes on, (Knapp), 555
Central Electric Stations, Automatic Regulation of Voltage for, Tyrell's (Kilburn Scott), 467
Chain Lock, A Simple, "The Bogey Man," 260
Champ Generating Station, Grenoble, France, (Dumas), 79
Change, Atmospheric, in its Effect on Load, Q., W.W., 76, 264
in Temperature, causing trouble with Bearing, H.C., 351
Channel Iron, Countersinking Holes inside, E. F., 446
Chart, *see* Graphical Chart
Chenab Canal, India, Development of Irrigation System connected with, (Preston), 559
Chilled Iron Car Wheels, (Slocum), 275
Chloride of Sodium, Electrolysis of, (Gall), 469
Chuck, *see* Face Plate or Chuck
Circular Saws, How to Temper, Q., "Aspirant," 353
Circulation in Shell Boilers, (Thomson), 562
Circumference of Boiler Shell, R., A. W. R., 76, *and* R. M., 354
Cities, Large, Abatement of Smoke in, (Benjamin), 181
Cleaning, by Sand-Blast, of Structural Steel, (Lilley), 457
Coal Consumption, Q., Q. E. F., 353
Gas and Allied Illuminants, The Future of, (Lewes), 276
Coil, *see* Ruhmkorff Coil
Colonial Office Conference, The, and Preferential Trade within the Empire, J. B. C. Kershaw, 155
Columbus, Ohio, Cost of Sand-Blast and other modes of cleaning Viaducts at, (Lilly), 457
Columns, *see* Beams and Columns
Combined Conduit and Overhead System for Bournemouth Tramways, (Connett), 275
Combustion of Liquid Fuel, (Lucke), 82
Commercial Development, The, of Inventions, G. W. de Tunzelmann, 153
Management of Electrical Tramways, Some Notes on the, T. W. Sheffield, 59, 129
Commutator, Building a, Q., E. C., 75, 263, R., J. H. H., 547
Repairing a Damaged, C. J. G., 346
Comparative Cost of Street Lighting, Electric and Gas, in America, (Lacombe), 461
Comparison, A, of Electric and Steam Traction, (Arnold and Potter), 83
of Test Bars, (Whitney), 85
Composite Transmission, Bedell System of, (McAllister), 462
Compound Explosion Engine, the, Some Remarks on, E. Butler, 391
Locomotives, Cylindrical Slide Valves in, (Pelletier), 83
Compressive Strength of Reinforced Concrete, (Considère), 78
Concrete, Armoured, (Considère), 266
Construction, Hennebique System, (Mensch), 78
Reinforced, The Strength of, (Considère), 78
Condensation Water, Greasy, as Boiler Feed, (Paterson), 562
Condensance, *see* Static Condensance
Condenser(s) (*see* Surface Condensers), Tubes, Electrolysis and Corrosion on, (Hobart), 86
Conduit and Overhead Systems, Combined for Bournemouth Tramways, (Connett), 275
Conference, *see* Colonial Office Conference
Congress, *see* Conference, "Houille Blanche" *and* International Congress
Connecting-Rod, the, The Dynamic Balance of, (Matthey), 466
—— —— long or short, which is the most powerful, Q., R. E. H., 353
Construction, Armoured Concrete, (Hennebique System), (Mensch), 78, (Considère), 266
of Diaphragm, Q., "Diaphragm," 75, 263, R., "Fraola," 353
The, of Docks, A. MacLachlan, 381
Modern Crane, G. W. Rushworth, 400
of Pattern for Cast-Iron Tuyère, 347
Consumers' Electricity Meters, Wanted a Reliable Seal for, W. W., 165
Consumption of Coal, Q., Q.E.F., 353
in Gas Engines, (Deschamps), 81
Control of Motor Speed (*see also* Speed Control) by Variable Reluctance, (Pickard), 271
Controversy on Entropy, *see* Entropy
Converter, *see* Static Converter
Converting a T-Square, F. Smith, 168
Cooper, J. E., Marine Engine Governors, 1
Corliss Valve Gears, Layout of, (Moss), 568
Corrosion, and Electrolysis, on Condenser Tubes, (Hobart), 86
by Electrolysis, (Knudson), 559
in Steel Buildings, (Norton), 171
Cost of Air Compression with Steam and Electricity, (Thompson), 80
Comparative, of Street Lighting, Electric Gas, in America, (Lacombe), 461
of Motive Power, Q., Q. E. F., 353
of Sand-Blast and other methods of cleaning Viaducts, Columbus, Ohio, (Lilly), 457
Countersinking Holes, inside Channel Iron, E. F., 446
Covering for Steam-pipes, (Scott), 174
Crane Construction, Modern, G. W. Rushworth, 400
Crank Effort, A Method of Calculating, 83
Crawford, Earl of, *see Valhalla*
Cupola, *see* Foundry Cupola
Currents, Alternating Simple Series Motors with, (Girault), 367
Curtis Steam Turbine, The, (Emmet), 561
Cutters, Formed Milling, "Backing off," F. B., 446
Cutting Angles of Tools, (Donaldson), 373
Strips of Brass to an Angle, Q., A. B., 353; R., S. W. A., 548
Cylinder-Boring Machine, *see* Double *do.*
Cylindrical Slide-Valves in Compound Locomotives, (Pelletier), 83

DALES, J. H., High-Speed Engines, The Influence of Governing on Torque, 101, 197, Balancing, 410
Dam, *see* Rockfill Dam
Deflections of Beams, with Variable Moments of Inertia, (Hudson), 554
De Laval Steam Turbine, The, (Andersson), 172
— — — — Notes on, (Watkinson), 366
Deposits, *see* Insoluble Deposits
Design, The, of Fly Wheels, A. Kemp, 377
of a Waterworks, (Ingham), 78
Details, *see* Types and Details
Determining the Sizes of Wooden Beams and Columns for Street Railway Bridge Construction, Table for, (Andrews), 458
the Temperature of Exhaust Gases, A Method of, R. H. Fernald, 121
de Tunzelmann, G. W., The Commercial Development of Inventions, 153
Development, The Commercial, of Inventions, G. W. de Tunzelmann, 153
Diaphragm, Construction of, Q., "Diaphragm," 75, 263, R., "Fraola," 355
Dissociation, *see* Electrolytic Dissociation
Distributed Lighting, (Burnett), 276
Docks, The Construction of, A. MacLachlan, 381
Double Cylinder-boring Machine, (Spencer & Co.'s), 251
Draft Gear, a Good, Essentials of, (Steinmetz), 369
Drilling Hole through Glass, Q., "Aspirant," 353, R., M. E. J. V. A., 550
Driving of Workshops, Three-Phase Motors for, (Eborall), 564
Dry Batteries, Recuperating, (Sherlock), 468
Dynamic Balance, The, of the Connecting-Rod, (Matthey), 466
Dynamometer, New, for Road Traction Experiments, 13
A Transmission, (English), 456
Dynamos, Alterations in, Q., W. W., 75, 263, R., J. H. H., 547
The Efficiency of, (Ashworth), 175
Large, The Manufacture of, (Kilburn Scott), 366

EAST Boston Tunnel, U.S.A., details *re*, (Carson), 458
Eccentric Plugs for Rough Castings, T. L. B., 349
Economical Speeds, The Most, for Goods Trains, (Barbier), 460
Edison Storage Battery, Improvements in, 559
Efficiencies of Riveted Lap-Joints, (Robbins), 364
Efficiency, The, of Dynamos, (Ashworth), 175
Effort, *see* Crank Effort
Egypt, *see* Nile
Elastic Strain, Graphic Representation of, (Keelhoff), 169
Electric Automobiles, (Joel), 369
Canal Haulage, The New Ganz System of, G. Szasz, 185
Car Lighting System, An, (Bliss), 461
and Gas Street Lighting, Comparative Cost of, in America, (Lacombe), 451
Lifting Magnets, (Fawcett), 373
Locomotive, High-speed, A 10,000-Volt, 89
Motors *versus* Insurance Companies, Q., Q. E. F., 353
—— Speed Control of, (Sayers), 564
—— Three-Phase, for the Driving of Workshops, (Eborall), 564
Power Station, Midland, Ocker Hall, Tipton, 81
—— Transmission, Bedell System of, (McAllister), 462
Properties of Alloys of Iron, (Barrett and other), 565
Railway(s), (*see* Behr's Mono-rail), A Single-Phase, U. S. A., (Lamme), 273

Electric Safety Fuses, The "Noarch," (Sachs), 470
Stations, *see* Central *do.*
and Steam Traction, A Comparison of, (Arnold & Potter), 83
Steering Gear on the *Valhalla* yacht, 342
Traction, Power Brakes for, tests of, (Keiley), 459
—— Ramassot System of, (Bainville), 370
Tramways, Marseilles, (Dubs), 460
Electrical Appliances, *see* Accumulator, Commutator, Dynamos, Generating Station, Incandescent Lamps, Motors, Series Motors, *etc.*,
Equipment of Antwerp Steel Works, 38
Measuring Instruments, Inadvisability of wiping before reading, W. W., 68
Signalling System, 534
Tramways, Some Notes on the Commercial Management of, T. W. Sheffield, 59, 129
Electrically-driven Lathe for Boring and Turning Cast-iron Pipes, (Addy's), 253
—— -operating Printing Machinery, The Ward-Leonard System of, 254
Electricity, Cost of Air-Compression with Steam and, (Thompson), 80
Meters, Q., W. W., 76, 264, R., G. C. C., 547
—— Consumers, Wanted a Reliable Seal for, W.W., 165
—— A Hint to Readers of, W. W., 165
Works, *see* Central Stations, Middlesbrough, Newcastle on-Tyne, *etc.*
Electrification of the Mersey Railway, 534
of Railways, (Bark), 557
Electro-Chemical Industries, (Gall), 469
—— Chemistry, High-Temperature, (Hutton), 468
Electro-Traction without Rails, (Bancelin), 558
Electrolysis of Chloride of Sodium, (Gall), 469
and Corrosion on Condenser Tubes, (Hobart), 86
Corrosion by, (Knudson), 559
with Soluble Anodes, Formation of Insoluble Deposits in, (Isenburg), 559
Electrolytes, Resistance of, (Wright), 273
Electrolytic Dissociation, Theory of, (Whetham), 368
Electrolytical Method for obtaining Metal Powders, (Zamboni), 560
Elliptical Templets, H. L. B., 72
Empire, The (British), The Colonial Office Conference and Preferential Trade within the, J. B. C. Kershaw, 155
Engine(s) *see* Explosive, Express, Gas, Governors, Locomotives, Marine, Oil, Steam, Superheating, Tank, Triple-Expansion, Waste Heat, Williams' Engines, *etc.*
An Old, Repairing, "Repair Engineer," 69
Compound Explosion, Some Remarks on, E. Butler, 391
High-Speed, The Influence of Governing on Torque, J. H. Dales, 101, 197, Balancing, 410
Irregularity Factor of, (Franke), 172
Tests, Report of Committee on Standardising, 465
Engineering, *see* Bakery *and* Laundry Engineering
—— Abstracts:—
Batteries, etc., 272, 468, 559
Construction, 77, 169, 266, 359, 456, 554
Dynamos, etc., 271, 366, 467, 564
Electrical, 175
Iron and Steel, 268, 360, 464, 565
Lighting, etc., 177, 276, 371, 461, 563
List of Publications regularly reviewed, 77, 169, 265, 356, 454, 551
Manufacturing, 250, 342, 438
Materials and Measurements, 456, 553
Mechanical, 265, 358, 470, 568
Metallurgy, 568
Miscellaneous, 85, 179, 470
Power, etc., 83, 172, 276, 372, 462, 558
Prime Movers, 268, 361, 465, 561
Tools and Workshop Practice, 85, 179, 373
Traction, 83, 178, 273, 368, 459, 555
Water, 469, 558
Works Management, 566
Engineer's Bookshelf, The, *(Reviews)*, 87, 184, 279, 375, 471
Entropy, (Poincaré), 365
Analysis of the Otto Cycle, (Reeves), 270
A Review of the Controversy, Swinburne *v.* Perry; Lodge intervening, 245
Essentials of a Good Draft Gear, (Steinmetz), 369
Excitation of Asynchronous Generators by Static Condensance, (McAllister), 272
Exhaust Gases, A Method of Determining the Temperature of, R. H. Fernald, 121
Experimental Laboratory Canal, (Bischoffsheim), 358
Experiments (in) Road Traction, New Dynamometer for, 13
Explosion Engine(s), Alcohol for, (Coupan), 81
—— —— Compound, Some Remarks on, E. Butler, 391
Explosions in Steam Pipes, (Strohmeyer), 364, 467
Explosive, *see* Shell
Express Engine, Ivatt's new 4-cylinder for the Great Northern Railway, 433
Extension of Line Shafting, An Emergency Job, Works Manager, 166, *see also*, 264

Face-Plate or Chuck, Fitting a, H. Hellfritsch, 70
Facing-up Valve-seats, in position, G. J. Rees, 349
Feed-water, Methods of Heating, (Kretz), 79
Fernald, R. H., A Method of Determining the Temperature of Exhaust Gases, 121
Fitting a Face-Plate or Chuck, H. Hellfritsch, 70
Fitting-up an old Turret Lathe, J. Hilton, 73
Flexible Wires, Improvement in, W. W., 346
Flue(s) of Boilers, How Tested, Q., E. H. D., 353
—— and Return Tubular Boiler, A Modern, 173
Flywheels, The Design of, A. Kemp, 377
Formed Milling Cutters, "Backing Off," F. B., 446
Formulæ for Machine Shops, (Moore), 179
Foster's Patent Steam Trap, 443
Foundry Cupola, Works Manager, 448
Practice, Q., J. F. B., 75, 263
Frames of Vertical Inverted Steam-Engines, Stresses (Meyer), 561
France, *see* Champ, "Houille Blanche," Marseilles, Paris
Freight Trains, Virtual Grades for, (Dennis), 274
Friction Pulleys of Silicated Cardboard, Denis's, (Lombard), 101
Fuel, (*see* Coal, Gas, Oil), Liquid, Combustion of, (Lucke), 82
Furnace, *see* Blast Furnace
Fuses, Electric Safety, the "Noarch," (Sachs), 470
Future, The, of Coal Gas and Allied Illuminants, (Lewes), 276, 371

Ganz System, the New, of Electric Canal Haulage G. Szasz, 185
Gas, (*see* Coal-gas, Exhaust Gases), and Electric Street Lighting, Comparative Cost of, in America, (Lacombe), 461
Gas-engine(s), Consumption in, (Deschamps), 81
Heating Plant, A, (Webber), 564
High-Speed, to Erect, H. T. M., 167
Large, Starting of, 174
and Oil engines, Relative Advantages of, Q., W. W., 76, 264
the Otto, Entropy Analysis of the Cycle of, (Reeves), 270
Power Transmission by, (Burstall), 558
Valve Gears, C. Hurst, 233
Gas-Holder Repair, getting rid of the Water, S. & B., 259
Gas-Mantle, Theory of the, (Solomon), 86
Gauge, *see* Taper Gauge, Tools and Gauges
Gears and Gearing, *see* Draft Gear, Valve Gear, Worm-Gearing, *etc.*
Generating Station at Champ-sur-Drac, Grenoble, France, (Dumas), 79
Generators, Asynchronous, Excitation of, by Static Condensance, (McAllister), 272
German(y), *see* Ganz System
Getting rid of the Water, from a Gas-holder for repair purposes, S. & B., 259
Gift Propositions for Paying Workmen, (Richards), 567
Glass, Drilling a Hole through, Q., "Aspirant," 353, R., M. E. J. V. A., 550
reinforced, *see* Verre Armée
Goldschmidt Aluminothermic process, (Firket), 179
Good Draft Gear, Essentials of a, (Steinmetz), 369
Goods Carriage by Electric Tramway, 60
Trains, The Most Economical Speeds for, (Barbier), 460
Governing, The Influence of, on Torque, High-Speed Engines, J. H. Dales, 101, 197
Governor Pulley, Improved, D. S., 350
Governors (of) Engines, Recording Apparatus of, (Riley), 366
(for) Marine Engines, J. E. Cooper, 1
Grades, Virtual, for Freight Trains, (Dennis), 274
Graphic Representation of Elastic Strain, (Keelhoff), 169
Graphical Chart for Valve-Gear Problems, (Durand), 269
Greasy Condensation Water as Boiler-Feed, (Paterson), 562
Great Eastern Railway, new 10 wheels, coupled Tank Engine for suburban Traffic, 433
Great Northern Railway, new 4-cylinder Express Engine for, Ivatt's design, 433
Grenoble, *see* Champ-sur-Drac
Grooving Small Taps, *etc.*, J. Scaife, 352

HARDENED Steel, Change in, Q., H. P., 75, R., H. W. and E. H. D., 354
Harris's Apparatus for making Ozone on a Commercial Scale, (Williams), 85
Haulage, *see* Canal Haulage *and* Traction
Heat, Loss of, from Bare Steam Pipes, (Paulding), 82
Treatment, Strength of White Iron Castings as influenced by, (Outerbridge), 565
Heating Feed-Water, Method of, (Kretz), 79
Plant, A Gas Engine, (Webber), 564
Horticultural Buildings, A New System of, (Meyere), 77
Heavy Traffic, Wood Pavement under, (Kummer), 169
Hennebique System of Armoured Concrete Construction, (Mensch), 78
Hesketh Prize, The, 86
Hewitt Mercury Vapour Lamp, The, and Static Converter, 162
Heyland Induction Motor, The, (De la Tour), 467
High Explosive Shell, Casting a, (Powell), 360
Pressure Steam, Large Stop-Valves for, (Gibson), 363
Speed Electric Locomotive, 10,000 volt, 89
—— Engines, Influence of Governing on Torque, T. H. Dale, 101, 197, Balancing, 410
—— —— Knock in, Methods of Avoiding, 197
—— Gas Engines, to erect, H. T. M., 167
—— Rotary Braiding Machine, 442
Temperature Electro-Chemistry, (Hutton), 468
Tension Cables, Lightning Protectors for, (Bainville), 463
Hint, A, to Meter Readers, W. W., 165
Hole(s), Countersinking inside Channel Iron, E. F., 446
Drilling through Glass, Q., "Aspirant," 353
Horticultural Buildings, A New System of Heating, (Meyere), 77
"Houille Blanche" Congress in France, F. Loppé, 473
Hutt Rotary Steam Engine, The, 43
Hurst, C., Gas Engine Valve Gears, 233
Hydraulic Plate-Bender, Fielding and Platt's), 440
Hydrogen, Electro-chemical Process for Production of, Renard's, (Gall), 469

IDLE Stroke, The, of the Planer, 277
Illuminants, *see* Coal Gas, Electricity, Gas, Hewitt, Oil, *etc.*
Improved Governor Pulley, An, D. S., 350
Improvement(s) in Edison's Storage Battery, 559
in Flexible Wires, W. W., 346
Incandescent Lamps, to Mark, W. W., 68
— — New Method of Applying, (Weissmann), 177
India, *see* Bengal-Nagpur Railway, Bhadar River, Punjab, Rupnarayan Bridge
India-rubber, chemistry of, Weber's book, (O'Gorman), 553
Induction Motor, The Heyland, (De la Tour), 467
Industries, Electro-Chemical, (Gall), 467
Inertia, Variable Moments of, Deflections of Beams, with, (Hudson), 554
Influence, The, of Governing, on Torque, in High-Speed Engines, J. H. Dales, 101, 197, 410
Insoluble Deposits, Formation of, in Electrolysis with Soluble Anodes, (Isenburg), 559
Instruments, *see* Electrical, Surveying, *etc.*,
Insurance Companies, Electric Motors *v.*, Q., Q. E. F., 353
International Congress on Methods of Testing Materials of Construction, (Zanen), 265
Inventions, The Commercial Development of, G. W. de Tunzelmann, 153
Inverted Steam Engines, *see* Vertical
Iron, (*see also* Cast, Channel, Chilled, White, Wrought Iron, *and* Steel)
Alloys of, Magnetic and Electric Properties of, (Barrett and others), 565
Industry, Briquetting in the, (Mould), 361
Pulleys, Wood *v.*, Q., S. F., 75, 263
and Steel Manufacture, Q., A. E. D., 550
Irregularity Factor of Engines, (Franks), 172
Irrigation, Recent, in the Punjab, (Preston), 559
Weir on the Bhadar River, India, (Benson), 469
Works on the Nile, W. N. Twelvetrees,
I. The Delta, 50, 139,
II. Upper Egypt, 147, 300
Isham Shell, The, 360
Ivatt's new 4-cylinder Express Engine for the G.N.R., 433

JANSON Water-Tube Boiler, 361
Jig for Reversing Links, E. H. D., 168
Joints, (*see* Lap Joints), of Steam-Pipes, (M'Callister), 175

KERSHAW, J. B. C., The Colonial Office Conference and Preferential Trade within the Empire, 155
Kemp, A., The Design of Fly-wheels, 377
Key-Slackening Appliance, A, J. B. Douglas, 73
Keys, The "Slackening Back" of, H. H. Broughton, 72
Knee, *see* Boring Knee

LABORATORY Canal, Experimental, (Bischoffsheim), 358
Labour, The Premium System of Remunerating, J. Ashford, 499
Lamp(s), (*see* Nernst Lamp), The Hewitt Mercury Vapour, 162
Incandescent, to mark an, W. W., 68
—— New Method of Applying, (Weissmann), 177
Lancashire Tramways, 178
Lap Joints, Riveted, Efficiencies of, (Robbins), 364
Large Cities, Abatement of Smoke in, (Benjamin), 181
Dynamos, Manufacture of, (Kilburn Scott), 366
Gas-Engines, Starting, 174
Stop-Valves, for High Pressure Steam, (Gibson), 363
Lathe(s), 8½-inch Patent Self-acting, etc., screw-cutting, (Ward, Haggas and Smith's), 250
Electrically-driven, for Boring and Turning Cast-Iron Pipes, (Addy's), 253
Improvements, S. F., 261
Old Turret, Fitting up, J. Hilton, 73
Laundry Engineering, F. J. Rowan, 30, 326
Lay-out of Corliss Valve Gear, (Moss), 568
Lead Storage Battery, Capacity of, (Marsh), 368
Length of Segment, *see* Brass, Cutting Strips . . . to an Angle
Life, The, of Tramway Rails, (Wilson), 556
Lifting Appliance, A, 259
Magnets, Electric, (Fawcett), 373
Light, New Standard of, Preliminary Study for, (Petavel), 563
Lighthouse, The New Beachy Head, T. Williams, 281
Lighting, (*see* Car, Electric, Gas, *and* Street Lighting), Distributed, 276
Lightning Protectors for High-Tension Cables, (Bainville), 463
Line Shafting, An Extension of, An Emergency Job, Works Manager, 166
Links, Jig for Reversing, E. H. D., 168
Liquid Fuel Combustion, (Lucke), 82
Liverpool, *see* Behr's Mono-Rail
Load(s), *see* Working Loads
increase, in Relation to Atmospheric Changes, Q., W. W., 76, 264
Location, *see* Railroad Location
Lock, A Simple Chain, "The Bogey Man," 260
Locomotive(s), *see* Compound, Electric, and other varieties of, *also* Engines
Oil Fuel for, 178
Practice, American, (Cowan), 557
Recent, 433
Three-Cylinder Compound Passenger, Midland Railway, (Johnson's pattern), 368
Lodge, Sir O., on a Definition of Entropy, *see* Entropy
London, proposed Bridge across the Strand, 170
London Bridge, the Widening of, 422
Long or Short Connecting-rod, Q., R. E. H., 353
Longmuir, P., Alloys as Revealed by Modern Research, 222
Loppé, F., The "Houille Blanche" Congress in France, 473
Loss of Heat from Bare Steam Pipes, (Paulding), 82
Lowest Cost of Motor Power, Q., Q. E. F., 353

MACHINE Shop Formulæ, (Moore), 179
— — Practice, The Use of a Surveying Instrument in, 289
Tools (*see* Engineering Abstracts *and* Some Recent Tools), Motor-Driving for, (Day), 276
McIntyre, J. T., Photographic Surveying, 20, 108
MacLachlan, A., The Construction of Docks, 381
Magnetic and Electric Properties of Alloys of Iron, (Barrett and others), 565
Magnets, Electric Lifting, (Fawcett), 373
Mains, *see* Steam Mains
Management, *see* Commercial Management
Manchester-Liverpool Electric Express Railway, 84
Steam Users' Association, Report of, for 1902, (Strohmeyer), 364, *cited* on Explosions in Steam Pipes, (*ib.*), 467
Manilla Rope, Working Loads for, (Hunt), 372
Manufacture of Large Dynamos, (Kilburn Scott), 366
of Open Hearth Basic Steel, (MacMillan), 268
Marine Engine(s), Balancing of, (Roundthwaite), 553
Governors, J. E. Cooper, 1
Marking an Incandescent Lamp, W. W., 68
Marseilles Electric Tramways, (Dubs), 469

Masonry, (*see* Cement Masonry), Bridges, Calculations for, Ritter's Methods, (Lossier), 359
Materials of Construction, Testing, International Congress on, (Zanen), 265
Measuring Instruments, Electrical, Inadvisability of wiping before reading, W. W., 68
Mercury Arc, The, (Steinmetz), 371
Vapour Lamp, The Hewitt, 162
Mersey Railway, Electrification of, 534
Metals and Minerals, *see* Alloys, Gold, Iron, Steel, *etc.*
for Bearings, Methods of Testing Oil and, (Breuil), 358
Powders, Electrolytical Method of Obtaining, (Zamboni), 560
Meters, *see* Electricity Meters
Method(s) of Avoiding Knock in High-Speed Engines, (Dales on), 197
A, of Calculating Crank Effort, 83
A, of Determining the Temperature of Exhaust Gases, R. H. Fernald, 121
Electrolytical, for Obtaining Metal Powders, (Zamboni), 560
of Heating Feed-Water, (Kretz), 79
of Testing Oils and Metals for Bearings, Dettmar's, (Breuil), 358
Metropolitan Railway, The, Paris, J. Boyer, 204, 319
Micrographic Analysis, The, of Steel, (Osmond), 464
Middlesbrough Electricity Station, 300-k.w. Triple-Expansion Engines at, by Davy and Watt, Ltd., 227, an emendation, 445
Midland Electric Power Station, Ocker Hill, Tipton, 81
Railway, 3-cylinder Compound Passenger Locomotives on, Johnson's pattern, 368
Military matters, *see* Ordnance, Projectile, Shells
Milling Cutter, Formed, "Backing Off," F. B., 446
Machine Wheel-cutting on, C. H. G., 166
Mississippi River, Cantilever Bridge across at Thebes, 359
Modern Crane Construction, G. W. Rushworth, 400
Flue and Return Tubular Boiler, 173
Research, Alloys as Revealed by, P. Longmuir, 221
Shop, the, Tools and Gauges in, (Orcutt), 567
Modernising an Old Engine, "Repair Engineer," 69
Mono-Rail, Behr's, 84
Mosely Commission, The, 530
Most Economical Speeds, for Goods Trains, (Barbier), 460
Motor(s), (*see* Electric *and* Series Motors), Heyland Induction, (De La Tour), 467
Single-Phase, Temporary Repair to a, W. W., 68
Speed, Control of, by Variable Reluctance, (Pickard), 271
Temporary Repair to a, W. W., 165, R., J. H. H., 452
Three-Phase, for the Driving of Workshops, (Eborall), 564
Motor-Cars on Railways, (Scott-Montagu), 459
Motor-Driving for Machine Tools, (Day), 276
Motor-Work, Variable Speed on Three-Wire System, (Storer), 272
Mountain Snows and Icefields, Reserve of Energy from, *see* "Houille Blanche"

NATURE, The, of Worm-Thread Contact, (Beale), 470
Naval and Marine Matters, (*see* Propeller, *Valhalla*)
Nernst Lamp, two Types of, (Stottner), 461
New Beachy Head Lighthouse, The, T. Williams, 281
Dynamometer for Road Traction Experiments, 13
Ganz System of Electric Canal Haulage, G. Szasz, 185
Method of Applying Incandescent Lamps, (Weissmann), 177
Oil Testing Machine, (Kingsbury), 265
Side Planing Machine, (Richards and Co.'s), 438
Standard of Light, Preliminary Study for, (Petavel), 563
System of Heating Horticultural Buildings, (Meyere), 77
New York, Steel Roadway in, 266
Newcastle-on-Tyne Tramways Station, Superheaters for, 445
Widening of Byker Bridge at, 313
Nicaragua Canal, Alternative Route for, (Le Baron), 77
Nile Irrigation Works, W. N. Twelvetrees,
I. The Delta, 50, 139
II. Upper Egypt, 147, 300, 518
Notes on Cement Masonry, (Knapp), 555
Some, on the Commercial Management of Electrical Tramways, T. W. Sheffield, 59
Novel Pelton Wheel Installation, 253

OIL Engines, Gas and, relative advantages of, Q., W. W., 76
Fuel, *see also* Liquid Fuel, for Locomotives, 178
and Metals for Bearings, Method for Testing, (Breuil), 358
Systems, (Drew), 86
Testing Machine, New, (Kingsbury), 265
Oiled-Shell Roads, U.S.A., 78
Old Engine, Modernising an, "Repair Engineer," 69
Turret Lathe, Fitting up an, J. Hilton, 73
Open-Hearth Basic Steel, Manufacture of, (MacMillan), 268
Ordnance, Wire-bound, Major C. Berthon, 489
Otto Gas-Engine Cycle, Entropy Analysis of, (Reeves), 270
Overhead Tramway System, *see* Bournemouth
Ozone, Purification of the Atmosphere by, Harris' apparatus for, (Williams), 85

PACIFIC Cable, The, 176
Panama Canal, The, (Morison), 469
Parallel Rods, etc., Planing, J. Green, 68
Paris Metropolitan Railway, The, J. Boyer, 204, 319
Patent Self-acting Screw-cutting 8¼-inch Lathe, (Ward, Haggas & Smith's), 250
Steam Trap, Foster's, 443
Pattern for Cast-Iron Tuyère, Construction of, 347
Pavement, *see* Wood Pavement
Paying Workmen, Gift Propositions for, (Richards), 567
Pelton Wheel Installation, A Novel, 253
Perry, Prof., on Definitions of Entropy, *see* Entropy
Phœnix Dynamo Manufacturing Co., Bradford, New Works of, 445
Photographic Surveying, J. T. McIntyre, 20, 108
Pipe(s), *see* Cast Iron *and* Steam Pipes
Pipe-Arch Bridge, U.S.A., 169
Piston Rod, A Slack, How cured, F. H. Palmer, 261
Planer, the Idle Stroke of, 277
Planing (*see* Side Planing), Parallel Rods, etc., J. Green, 68
Plate-Bender, Hydraulic, (Fielding and Platt's), 440
Plugs, *see* Eccentric Plugs
Polish on Turned Work, Q., H. P., 75, 253, R., E. F. K., 547
Portable Air-Compressing Plant for the Bengal-Nagpur Railway, (Richards & Co.'s), 438
Powders, *see* Metal-Powder
Power, (*see* Motor Power), from the Blast Furnace, (Uehling), 463
Brakes for Electric Traction, Tests of, (Keiley), 439
Station, Midland, 81
Transmission, Electric, Bedell System of, (McAllister), 462
—— by Gas, (Burstall), 558
Preferential Trade Within the Empire, The Colonial Office Conference and, J. B. C. Kershaw, 155
Preliminary Study for a New Standard of Light, (Petavel), 563
Premium System, The, of Remunerating Labour, J. Ashworth, 499
Printing Machinery, Electrically-operated, The Ward-Leon System of, 254
Problems in Valve-gear Design, (Kretz), 79
— — — — Graphical Chart for, (Durand), 269
Projectiles, Armour Piercing, (Carnegie), 360
Propellers, Boring Bar for, E. H. D., 351
Properties of Brick under different Physical Conditions, (Turrill), 554
Protectors, Lightning for High Tension Cables, (Bainville), 463
Protracted Job of Underpinning, U.S.A., 169
Pulleys, *see* Friction, Governor, *and* Wood Pulleys
Pumping, Rotative, (Richards), 82
Pumps, Rotary, (Wilkin), 374
Punjab, The, Recent Irrigation in, (Preston), 559
Purification of the Atmosphere by Ozone, Harris' apparatus, (Williams), 85
— Biological, of Water, (de Montricher), 469

QUESTIONS on Electric Tramways, Schedule of, 64

RAILROAD-CAR Braking, (Parke), 555
Location, Some Theories on, (Kerry), 556
Practice, British and American, (Yorke's Report, reviewed), 415
Rails, (*see* Tramway Rails), Electric Traction without, (Bancelin), 558
Railways, *see* Bengal-Nagpur, Bridges, Electric, Goods Trains, Great Eastern, Great Northern, Mersey, Paris, Metropolitan, Street Railway Bridges, *etc.*
British and American, (Worsdell), 178
Electrification of, (Bark), 557
Motor Cars and, (Scott-Montagu), 459
Ramassot Surface-Contact System of Electric Traction, (Bainville), 370
Rapid Vibrators, Recent, The Ruhmkorff Coil and, (Aliamet), 560
Recent Advance in Bakery Engineering, F. J. Rowan, 332
Irrigation in the Punjab, (Preston), 559
Locomotives, 433
Rapid Vibrators, The Ruhmkorff Coil and, (Aliamet), 560
Tools, Some, 250

Recording Apparatus for Engine Governors, (Riley), 366
Recuperating Dry Batteries, (Sherlock), 468
Regulation, *see* Automatic Regulation
Regulator, Automatic, for Septic Tanks, 171
— — for Voltage in Central Stations, Tyrell's, (Kilburn Scott), 467
Reinforced Concrete, The Compressive Strength of, (Considère), 78
Glass, *see* Verre Armé
Reliable Seal Wanted for Consumers' Electricity Meters, W. W., 165
Reluctance, *see* Variable Reluctance.
Remarks, Some, on the Compound Explosion Engine, E. Butler, 391
Remunerating Labour, The Premium System of, J. Ashworth, 459
Repair(s) to Damaged Commutator, C J. C., 346
to Gas-holder, 259
Temporary, to a Motor, W. W., 165, R., J. H. H., 452
—— to a Single-Phase Motor, W. W., 68
Repairing an Old Engine, "Repair Engineer," 69
Report of Col. Yorke, on American Railways and Transit, *reviewed*, 415
of Committee of Standardising Engine Tests, 465
Research, *see* Modern Research
Resistance of Electrolytes, (Wright), 273
Reversing Links, Jig for, E. H. D., 168
Review(s) of Books, *see* Engineer's Bookshelf
of the Controversy on Entropy, 245
of Yorke's Report on American Railways Transit Methods, 415
Revolution, The Weight of Solids of, (Summers), 456
Ruhmkorff Coil, The, and Recent Rapid Vibrators, (Aliamet), 560
Rio Grande Railway Bridge, S. America, 170
Riveted Lap-Joints, Efficiencies of, (Robinson), 364
Road(s), Oiled Shell, U.S.A., 78
Tarred-Slag, (Hooley), 78
Traction Experiments, New Dynamometer for, 13
Roadway of Steel, New York, 266
Rock-fill Dam, Small, U.S.A., (Parsons), 558
Rods, *see* Bent, Connecting, Parallel *and* Piston Rods
Rolling Stock of the Paris Metropolitan Railway, 319-20
Rope, *see* Manilla Rope
Rotary Braiding Machine, High-Speed, 442
Pumps, (Wilkin), 374
Steam Engine, The Hult, 43
Rotative Pumping, (Richards), 82
Rough Castings, Eccentric Plugs for, T. L. B., 349
Route, Alternative, for the Nicaragua Canal, (Le Baron), 77
Rowan, F. J., A Recent Advance in Bakery Engineering, 332
— Laundry Engineering, 20, 326
Rupnarayan Bridge, Bengal-Nagpur Railway, 171
Rushworth, G. W., Modern Crane Construction, 400

Safety Fuse, Electric, The Noarch, (Sachs), 470
Sand-Blast Cleaning of Structural Steel, (Lilly), 457
Saw, Circular, How to Temper, Q., "Aspirant," 353
Schedule of Questions on Electrical Tramways, 64
Screw-cutting, etc., 8¼ inch Lathe, (Ward, Haggas & Smith's), 250
—— Machine, Automatic, Camming an, (Teboult), 179
Seal, *see* Reliable Seal
Seats, *see* Valve Seats
Sections, British Standard, List I., 456
Segment, Length of, *see* Cutting Brass Strips
Self-Acting Screw-cutting 8¼ inch Lathe, (Ward, Haggas & Smith's), 250
Septic Tanks, Automatic Regulators for, 171
Series Motors with Simple Alternating Currents, 367
Sewage Effluents, The Stability of, 374
Shafting, (*see* Line Shafting), Hints, (Herrmann), 463
Machines, or Slotting Machines. *see* Slotting Machines
Sheffield, T. W., Some Notes on the Commercial Management of Electrical Tramways, 59, 129
Shell, (*see* Boiler Shell), Boilers, Circulation in, (Thomson), 562
High Explosive, Casting a, (Powell), 360
The Isham, 360
Shop Construction, (Perrigo), 360
Side-Planing Machine, New, (Richards & Co.'s), 438
Signalling System, New Electric, 524
Silicated Cardboard Friction Pulleys, Denis's, (Lombard), 181
Simple Alternating Currents, Series Motors with, (Girault), 367
Chain Lock, A, "The Bogey Man," 260
Single-Phase Electric Railway, A, U.S.A., (Lamme), 273
— Motor, Temporary Repair to, W. W., 68
Sinking Fund Charges, (Booth), 566
Slack Piston Rod, How Cured, F. H. Palmer, 261
"Slacking Back," The, of Keys, H. H. Broughton, 72
Slag in Cement-Making, (Eckel), 79
in Road-Making, (Hooley), 78
Slide-Valve, *see* Cylindrical *do.*
Slotting or Shaping Machines, Slow-advance and Quick return motion in, (MacCord), 85
Slow-advance and Quick-return Motion in Slotting or Shaping Machines, (MacCord), 85
Small Rock-fill Dam, U.S.A., (Parsons), 558
Taps, Grooving, J. S. Scaife, 353
Smoke Abatement in Large Cities, (Benjamin), 181
Soapsuds as Lubricants for Turned Work, resultant Polish, Q., H. P., 75, 263, R., E.S.K., 547
Solids of Revolution, The Weight of, (Summers), 456
Soluble Anodes, *see* Anodes
Some Notes on the Commercial Management of Electrical Tramways, T. W. Sheffield, 59, 129
Recent Tools, 250
Remarks on the Compound Explosion Engine, E. Butler, 391
Theories upon Railroad Location, (Kerry), 556
Speed(s), *see* Motor Speed, Variable Speed
Control, The Storage Battery as a Factor in, (Cohn), 273
— of Electric Motors, (Sayers), 564
The Most Economical, for Goods Trains, (Barbier), 460
Stability of Sewage Effluents, 374
Standard of Light, New, Preliminary Study for, (Petavel), 563
Standard Sections, British, List I., 456
Standardising Engine Tests, Report of Committee on, 465
Starting Large Gas Engines, 174
Static Condensance, Excitation of Asynchronous Generators by, (McAllister), 272
Converter, The Hewitt, 162
Steam (*see* High-Pressure Steam, Superheating, *etc.*)
and Electric Traction, A Comparison of, (Arnold and Potter), 83
and Electricity, Cost of Air Compression with, (Thompson), 80
Engine(s), The Hult Rotary, 43
—— Vertical Inverted, Stresses on Frames of, (Meyer), 561
Mains, Cast *v.* Wrought Iron, (Robbins), 173
Pipe(s), Bare, Loss of Heat from, (Paulding), 82
—— Covering, (Scott), 174
—— Explosions, (Strohmeyer), 364, 467
—— Joints, (McAllister), 175
Trap, Foster's Patent, 443
Turbine, *see* Curtis, *and* De Laval
Steel, (*see* Iron *and* Structural Steel)
Ball-bearings, Researches on, (Stribeck and others), 278
Basic, Manufacturer of Open Hearth, (MacMillan), 268
Buildings, Corrosion in, (Norton), 71
Case-hardening, (Markham), 465
Hardened, Change in, Q., H. P., 75, R., H. W., and E. H. D., 354
Micrographic Analysis of, (Osmond), 464
Roadway, New York, 266
Works, *see* Antwerp, *and* Bethlehem, U.S.A.
Steel-Tool Process, The Taylor-White, 464
Steering Gear, *see* Electric *do.*
Stokers, Automatic, and Smoke Abatement, (Benjamin), 181
Stop Valves, Large, for High Pressure Steam, (Gibson), 362
Storage Battery, Edison's, Improvements in, 559
The, as a Factor in Speed Control, (Coho), 273
— Lead, Capacity of, (Marsh), 368
Strain, *see* Elastic Strain
Strand, The, Proposed Bridge Across, 170
Street Lighting, Gas and Electric, Comparative Cost of, in America, (Lacombe), 461
Railway Bridge Construction, Table for determining the sizes of Wooden Beams and Columns, for (Andrews), 453
Strength, The Compressive of Reinforced Concrete, (Considère), 78
of White Iron Castings as Influenced by Heat Treatment, (Outerbridge), 565
Stresses on Frames of Vertical Inverted Steam Engines, (Meyer), 561
Strips of Brass, Cutting, to an Angle, Q., H. B., 353
Stroke, The Idle, of the Planer, 277
Structural Steel, Sand-Blast Cleansing of, (Lilly), 457
Study, *see* Preliminary Study
Submarine Telegraph, The All-British, 176
Superheaters for Newcastle-on-Tyne Tramways Station, 445
Superheating, (Booth), 82
of Steam by Wire Drawing, (Watkinson), 366

Surface Contact System of Electric Traction (*see* Bournemouth), the Ramassot, (Bainville), 370
Condensers, (Robbin's), 81
Surveying Instrument, The Use of a, in Machine-Shop Practice, 289
— — Photographic, J. H. McIntyre, 20, 108
System, (*see* Surface-Contact), A New, of Heating Horticultural Buildings, (Meyere), 77

T-SQUARE, Converting a, F. Smith, 168
Table, *see* Surface Table
Tank Engine, 10-wheels-coupled, for G.E.R. suburban traffic, 433
Tanks, Septic, Automatic Regulators for, 171
Taper Gauge, A, F. Smith, 70
Tapping Device, A, J. W. B., 262
Taps, etc., Small, Grooving, J. D. Scaife, 352
Tar Macadam, (Hooley), 78
Taylor-White Steel-Tool Process, 464
Telegraph, The All-British Submarine, 176
Telephones, Bells and, Testing Arrangements for, W. W., 347
Telephony, Wireless, (Collins), 176
Telodynamical Traction, (Ferretti), 556
Teltow Canal, Germany, haulage Competitions on, 185 *et seq.*
Temperature, Changes in, causing trouble with Bearings, H. C., 35
of Exhaust Gases, A Method of Determining, R. H. Fernald, 121
Tempering a Circular Saw, Q., "Aspirant," 353
Template Appliance, A, E. Fleming, 70
Templets, Elliptical, H. H. B., 72
Temporary Repair to a Motor, W. W., 165, R., J. H. H., 452
— — to a Single-Phase Motor, W. W., 68
Ten-thousand Volt High-speed Electric Locomotive, 89
Ten-wheel-coupled Tank Engine for G.E.R. suburban Traffic, 433
Test(s), Bars, Comparison of, (Whitney), 85
of Brakes, (Keiley), 459
Engine, Standardising, Report of Committee on, 465
Testing, (*see* Oil Testing), Arrangement for Bells and Telephones, W. W., 347
of Boiler Flues, Q., E. H. D., 353.
Materials of Construction, International Congress on, Zanen, 265
Theory(ies) and Calculation of the Two-Hinged Arch, (McKim), 554
of Electrolytic Dissociation, (Whetham), 368
of the Gas-Mantle, (Solomon), 86
upon Railroad Location, Some, (Kerry), 556
Thermal Emissivity, (Peck), 85
Three-Cylinder Compound Passenger Locomotive, Midland Railway, Johnson's pattern, 368
Hundred K. W. Triple Expansion Engine, Middlesbrough Electricity Works, (Davy Bros., Ltd.), 227, 445
Phase Motors for the Driving of Workshops, (Eborall), 564
Wire System, Variable Speed Motor Work on, (Storer), 272
Tools, *see* Gauges, Templates, *etc.*,
Cutting Angles of, (Donaldson), 373
and Gauges in the Modern Shop, (Orcutt), 567
Some Recent, 250
Torque, the Influence of Governing on High-Speed Engines, J. H. Dales, 101, 197, 410
Tour of Trades' Union Officials in the U.S.A., (The Mosely Commission), 530
Traction, *see* Electric, Road, Telodynamical, *etc.*
Trade, *see* Preferential Trade
Trades' Union Officials, Tour of in the U.S.A., 530
Traffic, Heavy, Wood Pavement under, (Kummer), 169
Trains, *see* Freight *and* Goods Trains, Railways, *etc.*
Tramway(s), *see* Bournemouth Electric Tramways, Marseilles, *etc.*,
mileage in Lancashire, 178
Rails, The Life of, (Wilson), 556
— Wetting, Q., W. W., 76, 264, R., E. F. K., and Tramrails, 548
Transmission, Bedell System of Composite, (McAllister), 62
Dynamometer, A, (English), 456
Trap, *see* Steam Trap
Tubes, *see* Condenser Tubes
Tubular Boiler, A Modern Flue and Return, 173
Tunnel Construction, Underwater, (Carson), 458
Turbines, *see* Steam Turbines
Turned Work, Polish on, Q., H. P., 75, 263
R., E. F. K., 547
Turret Lathe, an Old, Fitting up, J. Hilton, 73
Tuyère, *see* Cast Iron Tuyère
Twelvetrees, W. N., Nile Irrigation Works,
I. The Delta, 50, 139
II. Upper Egypt, 147, 300, 518
Two-Hinged Arch, Theory and Calculation of, (McKim), 554
Types and Details of Bridge Construction, (Skinner), 554

UNDERPINNING, A Protracted Job of, U.S.A., 169
Under-water Tunnel Construction, (Carson), 458
Use of a Surveying Instrument in Machine-Shop Practice, 28

VACUUM, Spoilt by a Bent Rod, Dunelmian, 350
Valhalla, (Earl of Crawford's yacht), Electric Steering Gear of, 342
Valves, *see* Cylindrical Slide Valves, Large Stop, Seats Superheating, *etc.*
Valve-gear(s) Design, Problems in, (Kretz), 79
— — Gas-Engine, C. Hurst, 233
— — Lay-out of Corliss, (Moss), 568
— — Problems, Graphical Chart for, (Durand), 269
Variable Moments of Inertia, Deflection of Beams with, (Hudson), 554
Reluctance, Motor Speed Control by, (Pickard), 271
Speed, Motor Work on Three Wire System, (Storer), 272
Verre Armé, Le, (Appert), (Re-inforced glass), 267
Vertical Inverted Steam Engines, Stresses on Frames of, (Meyer), 561
Viaducts, cleaning of, by Sandblast, U.S.A., 457
Virtual Grades for Freight Trains, (Dennis), 274
Voltage, Automatic Regulator for, in Central Stations, Tyrell's, (Kilburn Scott), 467

WANTED, Reliable Seal for Consumers' Electricity Meters, W. W., 165
Ward-Leonard System, The, of Electrically Operating Printing Machinery, 254
Waste Heat Engine, The, (Miller), 268
Water, *see* Feed Water, Greasy Water, Irrigation, *etc.*
Biological Purification of, (de Montricher), 469
Getting Rid of, in a Gas-holder repair, S & B., 259
Water Power from Mountain Snow, *see* "Houille Blanche"
Water-Tube Boilers, The Janson, 361
Waterworks, Design of a, (Ingham), 78
Weight of Castings, Calculating the, (Schwerin), 85
of Solids of Revolution, (Summers), 456
Weir, Irrigation, on the Bhadar River, India, (Benson), 469
Wetting Tramway Rails, Q., W. W., 76, 264, R., G. F. K., and "Tram Rails," 548
Wheel's), *see* Car-Wheels, Cast-Iron, *and* Pelton Wheel
Wheel-cutting on Milling Machine, C. H. G., 166
White Iron Castings, Strength of, as influenced by Heat Treatment, (Outerbridge), 565
Widening of Byker Bridge, Newcastle-on-Tyne, 313
—— of London Bridge, 422
Williams Engine, The, 365
—— T., The New Beachy Head Lighthouse, 281
Wiping Glass of Electrical Measuring Instruments, Effect of, W. W., 68
Wire(s), *see* Flexible Wires *and* Three-Wire System
Wire-bound Ordnance, Major C. Berthon, 489
Wire-drawing, Superheating of Steam by, (Watkinson), 366
Wireless Telephony, (Collins), 176
Wood Pavements under Heavy Traffic, (Kummer), 169
Pulleys *v.* Iron, Q., S. F., 75, 263, R., "Fraola," 365
Wooden Beams and Columns, in Street Railway Bridge Construction, Table for determining sizes of, (Andrews), 458
Working Loads for Manilla Rope, (Hunt), 372
Workmen, Gift Propositions for Paying, (Richards), 567
Workshop(s), (*see also* Modern Shop), Construction, (Perrigo), 171
Driving of, Three-Phase Motors for, (Eborall), 564
Economics, *see* Gift Propositions for Workmen *and* Sinking Fund Charges.
Workshop Practice, 68, 165, 259, 346, 446
Queries and Answers, 75, 263, 353, 452
Worm-Gearing, (Blades), 277
— —, Q., W. W., 76, 264, R., B.Sc., 453, T. T., 549
Worm-Thread Contact, the Nature of, (Beale), 470
Wrought Iron, Cast Iron *v.* for Steam Mains, (Robbins), 173

YORKE, Lt.-Col. H. A., Report on a Visit to America, reviewed, 415